



**STATE OF TENNESSEE**  
**DEPARTMENT OF TRANSPORTATION**  
**TRAFFIC OPERATIONS DIVISION**  
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CLAY BRIGHT  
COMMISSIONER

BILL LEE  
GOVERNOR

TO: Will Reid  
Assistant Chief Engineer of Operations

FROM: <sup>MA</sup>Brad Freeze, Director of Traffic Operations

SUBJECT: **Proprietary Item Request and Justification**  
**City of Lebanon**

- 1) **Traffic Signal Controllers and Malfunction Management Units (MMU)**
- 2) **Traffic Signal Vehicle Detection Equipment**

- 1) **Traffic Signal Controllers and Malfunction Management Units (MMU):** The City of Lebanon is requesting that Econolite traffic signal controllers and Reno Malfunction Management Units (MMU) be used in all signalization projects within the City over the next three years where Federal and/or State funding are used. The Econolite traffic signal controllers include Colbalt-C type and the Reno MMUs include 1600GE type. The following are justification items for this request:

The City of Lebanon is underway to change out the traffic signal control equipment City-wide in an effort to standardize and synchronize their traffic signal communication for all 58 intersections City-wide. The City currently has four traffic signal intersections already changed out to Econolite traffic signal controllers and Reno MMUs, and there are three additional signalization projects containing a total of 15 traffic signal intersections being changed out to Econolite traffic signal controllers and Reno MMUs. One of these signalization projects that is underway will be installing fiber communications and the City's new central software system (Centracs). The Econolite traffic signal controllers and Reno MMUs are requested for installation to insure that the City will have full functionality for their Centracs central software system.

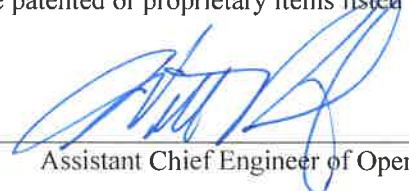
The City of Lebanon staff has been extensively trained to install, operate, maintain, program, and troubleshoot Econolite traffic signal controllers and Reno MMUs. This allows the City's technicians to quickly diagnose problems with field units which reduces the time required to maintain the system overall and helps keep the system operational during heavy traffic times to insure maximum capacity of the synchronized system. By utilizing the Econolite traffic signal controllers and Reno MMUs as the standard for the City, there will be a cost savings in stocking replacement equipment which will result in faster and less costly repair.

- 2) **Traffic Signal Detection Equipment:** The City of Lebanon is requesting that the Wavetronix traffic signal radar detection equipment be used in all signalization projects within the City over the next three years where Federal and/or State funding is used. The Wavetronix radar detection equipment includes both SmartSensor Matrix for stop bar detection and the SmartSensor Advance for advanced approach detection. This request is based on the necessity to provide highly reliable detection for the synchronization with the existing traffic signal systems operated and maintained by the City. The following are justification items for this request:

The City of Lebanon currently has four traffic signal intersections already changed out to Wavetronix radar detection and there are three additional signalization projects containing a total of 15 traffic signal intersections being changed out to this type of radar detection. The City of Lebanon has tested various types of video and radar detection units. From these tests, the City has seen excellent performance with the Wavetronix radar detection system with little to no maintenance required. Because of the re-occurring maintenance costs of replacing loops and experiences with periodic failures from video detection, the City developed standards and specifications that require all traffic signal detection equipment installed City-wide to be Wavetronix radar detection. The City's traffic signal standards and specifications can be found on their website: <http://www.lebanontn.org/DocumentCenter/View/2591/Lebanon-traffic-signal-specifications>. This standardization of Wavetronix radar detection ensures that design plans install this detection system on all new projects plus converting the detection system at existing signalized intersection as existing detection systems fail. The use of Wavetronix radar detection increases the reliability of vehicle, bicycle, and pedestrian detection and directly relates to the overall full functionality operation and synchronization of signalized intersections network.

The City of Lebanon staff has been trained to install, operate, maintain, and troubleshoot Wavetronix radar detection. By utilizing this detection as the standard for the City, there will be a cost savings in stocking replacement equipment and will result in faster and less costly repair.

I, Brad Freeze, Director of the Traffic Operations Division of the Tennessee Department of Transportation, do hereby certify that in accordance with the requirements of 23 CFR 635.411(a) (2) that the patented or proprietary items listed above are essential for the synchronization of existing facilities.



Assistant Chief Engineer of Operations

8/10/19  
Date



**Bernie Ash, Mayor**

200 North Castle Heights Avenue  
Lebanon, Tennessee 37087

May 7, 2019

Stephen K. Bryan, P.E., PTOE  
Tennessee Department of Transportation  
Traffic Operations Division  
James K. Polk Bldg., 12<sup>th</sup> Floor  
505 Deaderick St., Nashville, TN 37243

**Request for Proprietary Traffic Signal Products Certification:  
Traffic Signal Controllers, Malfunction Management Units, and Detection**

Mr. Bryan:

The Engineering and Public Works Departments of the City of Lebanon would like to request proprietary product certifications for the Econolite Cobalt-C Traffic Signal Controller, Reno 1600GE Malfunction Management Units (MMUs) and Wavetronix radar traffic signal detection over the next three years. The requested Wavetronix radar detection equipment includes both SmartSensor Matrix for stop bar detection and SmartSensor Advance for advanced approach detection. Many of Lebanon's traffic signals are located within the state route system and use of the proprietary items would allow the City to maintain and operate the coordinated traffic signal systems in a more efficient and effective manner.

The City of Lebanon has begun a change out of traffic signal control equipment City-wide to standardize signal equipment for 58 intersections and has plans to install a central software system. Currently, the City has 4 traffic signal controllers changed out to Econolite traffic signal controllers with Reno MMUs, and 3 additional signalization projects currently underway that will require this type of controller to insure that we will have full functionality for the planned central software system. This full functionality is needed to prepare for our on-going CMAQ grant project in conjunction with the TDOT Local Program department which will install new fiber communications, an additional 15 new signal controllers, and the central software system (Centrac). This will allow our staff to diagnose problems over the central software prior to leaving our offices which reduces the time required to maintain the system overall and helps keep the system operational during heavy traffic times to insure maximum capacity of the synchronized system. Also, as part of the City-wide change over to the new traffic signal control equipment our staff has been exclusively trained on the programming, maintenance, and troubleshooting of the Econolite Cobalt-C traffic signal controllers.

As the Lebanon population and traffic volumes continue to grow, the City must find minimally evasive solutions to optimizing the existing traffic signal system. Because of the reoccurring maintenance cost of replacing loops with a high failure rate and the loss of efficiency in a coordinated traffic signal system when a loop has failed, the City has standardized plans to install Wavetronix radar detection on new signals and convert the existing signals as the current loop detection fails and budget allows. Failed detection results in longer delays, increased stop time, and increased fuel consumption and emissions for

all users. Lebanon has tested a number of available detection devices, including various video and radar detection units. The City has seen excellent performance with the Wavetronix system with little to no maintenance required and a high level of support from the local Wavetronix representatives for troubleshooting. Wavetronix is a non-intrusive detection device which is a cost savings over time as this system will not have to be replaced when a roadway is milled and resurfaced as compared to loop installations. Wavetronix detection increases the reliability of vehicle, bicycle, and pedestrian detection and directly relates to the overall operation of signalized intersections. Currently, the City has 4 intersections with Wavetronix detection, and 5 additional signal projects underway that will require this type of detection. The on-going CMAQ grant project will also install Wavetronix detection at strategic intersections. Wavetronix equipment reduces the time required to maintain the system overall and helps keep the system operational during heavy traffic times to insure maximum capacity of the synchronized system. This request is founded on the necessity to provide highly reliable and efficient detection for the synchronization of Lebanon's traffic signal system.

Specifications for City of Lebanon Traffic Signals have been prepared as well and all traffic signal projects within the City will be required to adhere to those specifications, which include the requested proprietary items. By keeping with these proprietary products the City of Lebanon can better maintain Lebanon's Traffic Management System and reduce system down time.

Thank you for consideration of this request.

Respectfully,



Kristen D. Rice, PE  
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